The flint tools used during this earliest phase at Ali Kosh were varied and abundant. Finds from this period include tens of thousands of tiny flint blades, some only a few millimeters wide. About 1 percent of the chipped stone that archaeologists found was obsidian, or volcanic glass, which came from what is now eastern Turkey, several hundred miles away. Thus, the people at Ali Kosh during its earliest phase definitely had some kind of contact with people elsewhere.

From 6750 to 6000 B.C., the people increased their consumption of cultivated food plants; 40 percent of the seed remains in the hearths and refuse areas were now from emmer wheat and barley. The proportion of the diet coming from wild plants was much reduced, probably because the cultivated plants have the same growing season and grow in the same kind of soil as the wild plants. Grazing by the goats and sheep that were kept may also have contributed to the reduction of wild plant foods in the area and in the diet. The village may or may not have grown larger, but the multiroom houses definitely had. The rooms were now larger than 10 feet by 10 feet; the walls were much thicker; and a mud mortar now held the clay-slab bricks together. Also, the walls now often had a coat of smooth mud plaster on both sides. There were courtyards with domed brick ovens and brick-lined roasting pits.

Even though the village probably contained no more than 100 individuals, it participated in an extensive trading network. Seashells were probably obtained from the Persian Gulf, which is some distance to the south; copper may have come from what is now central Iran; obsidian was still coming from eastern Turkey; and turquoise somehow made its way from what is now the border between Iran and Afghanistan. Some of these materials were used as ornaments worn by both sexes—or so it seems from the remains of bodies found buried under the floors of houses.

After about 5500 B.C., the area around Ali Kosh began to show signs of a much larger population, apparently made possible by a more complex agriculture employing irrigation and plows drawn by domesticated cattle. In the next thousand years, by 4500 B.C., the population of the area probably tripled. This population growth was apparently part of the cultural developments that culminated in the rise of urban civilizations in the Near East.41

Domestication in Mesoamerica

A very different pattern of domestication is seen in Mesoamerica. Here the seminomadic Archaic hunting and gathering lifestyle persisted long after people first domesticated plants.42 People sowed a variety of plants, but after doing so, they went on with their seasonal rounds of hunting and gathering, and came back later to harvest what they had sown. Domestication may have been a way for Archaic peoples to make desirable plants more common in their environment. For example, one of the first domesticates was the bottle gourd. These were not eaten but were used to carry water. Joyce Marcus and Kent Flannery hypothesize that: people deliberately domesticated the bottle gourd by planting them in areas where they did not grow naturally, so that as groups moved through those areas, they always had access to gourds for carrying water.43

Other domesticates include tomatoes, cotton, a variety of beans and squashes, and, perhaps most importantly, maize. The earliest domesticated form of maize (corn), dating from about 5000 B.C., has been found in Tehuacán, Mexico. Genetic studies of maize show that it was domesticated from teosinte, a tall wild grass that still grows widely in Mexico.44 Indeed, these genetic studies suggest that changes occurred in only two genes, one related to the kernel glumes (outer casing), and one related to the stalk shape.45 The genes of modern corn were already established 4,000 to 6,000 years ago.

Early maize was quite different from modern maize. The oldest maize cobs—dating to about 7,000 years ago—are tiny, only about an inch long. They have only a half-dozen rows of seeds, and each seed is tiny. Maize is almost completely dependent on humans to reproduce—the shift from seeds with brittle coats to cobs with a tough husk meant that someone had to open the husk without damaging the seeds for them to be dispersed and reproduce.46

People who lived in Mesoamerica, Mexico, and Central America are often credited with the invention of planting maize, beans, and squash together in the same field. This planting strategy provides some important advantages. Maize takes nitrogen from the soil; beans, like all legumes, put nitrogen back into the soil. The maize stalk provides a natural pole for
the bean plant to twine around, and the low-growing squash can grow around the base of the tall maize plant. Beans supply people with the amino acid lysine, which is missing in maize. Thus, maize and beans together provide all the essential amino acids that humans need to obtain from their food. Teosinte may have provided the model for this unique combination, as wild runner beans and wild squash occur naturally where teosinte grows.47

Domestication Elsewhere in the World

South America and the Eastern United States Outside of Mesoamerica, evidence of independent domestication of plants comes from at least two areas in the New World: South America and the eastern United States. The first plants to be domesticated in the New World were members of the cucurbit family, including the bottle gourd and a variety of squashes, all probably domesticated some time after 7500 B.C. In addition to these and other plants domesticated in Mesoamerica, we can trace more than 200 domesticated plants to the Andes in South America, including potatoes, lima beans, peanuts, amaranth, and quinoa (see the box feature on “Raised Field Agriculture”). The first clear domesticates were squashes and gourds, which may date back to 8000 B.C., which makes domestication in the Andes as old as in Mesoamerica, and perhaps even older.48 The origins of the root crops manioc and sweet potato are less certain, but those crops probably originated in lowland tropical forest regions of South America.49

Many of the plants grown in North America, such as corn, beans, and squash, were apparently introduced from Mesoamerica. But at least three seed plants were probably domesticated independently in North America at an earlier time—sunflowers, sumpweed, and goosefoot. Sunflowers and sumpweed contain seeds that are highly nutritious in terms of protein and fat; goosefoot is high in starch and similar to corn in food value.50 Sumpweed is an unusually good source of calcium, rivaled only by greens, mussels, and bones. It is also a very good source of iron (better than beef liver) and thiamine.51 These plants may have been cultivated in the area of Kentucky, Tennessee, and southern Illinois beginning around 2000 B.C. (Corn was introduced about A.D. 200.)

On the whole, domestic animals were less important economically in the New World than they were in many parts of the Old World. The central Andes was the only part of the New World where animals were a significant part of the economy. Used for meat, transportation, and wool, llamas and alpacas (members of the camel family) were domesticated as early as 5000 B.C. in the Andes.52 Guinea pigs, misnamed because they are neither pigs nor from Guinea, are rodents that were domesticated in the Andes sometime later. They were an important source of food even before domestication.53 Since they were domesticated, they have been raised in people’s dwellings.

Animal domestication in the New World differed from that in the Old World because different wild species were found in the two hemispheres. The Old World plains and forests were the homes for the wild ancestors of the cattle, sheep, goats, pigs, and horses we know today. In the New World, the Pleistocene herds of horses, mastodons, mammoths, and other large animals were long extinct, allowing few opportunities for domestication of large animals.54

East Asia The earliest clear evidence of cereal cultivation outside the Near East is from China. Late in the 6th millennium B.C. in northern China, there were sites where foxtail millet was cultivated. Storage pits, storage pots, and large numbers of grinding stones suggest that millet was an enormously important item in the diet. The wild animal bones and the hunting and fishing tools that have been found suggest that people still depended on hunting and fishing somewhat, even though domesticated pigs (as well as dogs) were present. In southern China, from about the same time, archaeologists have found a village by the edge of a small lake where people cultivated rice, bottle gourds, water chestnuts, and the date-like fruit called jujube. The people in southern China also raised water buffalo, pigs, and dogs. And, as in the northern China sites, some of their food came from hunting and fishing.55

Mainland Southeast Asia may have been a place of domestication as early as the Near East was. The dating of domestication in Southeast Asia is not yet clear; the dates of the oldest site with probable domesticates—Spirit cave in northwest Thailand—range from about 9500 B.C. to 5500 B.C. Some of the plants found at Spirit cave are not clearly distinguishable from wild varieties, but others, such as gourds, betel nut, betel leaf, and water chestnut, were probably domesticates.56 Some early cultivated crops may not have
Raised Field Agriculture

Most agricultural systems in the Americas today rely upon either animal power or large machines to cultivate the soil and harvest food. But in the past, people had no traction animals or machines to help with agricultural production. How did the ancient farmers in the Americas till the soil and harvest crops? The answer is that they used human labor. In most cases, animal or mechanical power is much more efficient than human power, and allows more food to be grown on the same piece of land. Archaeologists, however, have found that some ancient, human-powered agricultural systems are actually better suited to specific local environments and produce more food than modern, mechanized systems. These archaeologists have started to use their knowledge of ancient food production to help modern communities improve their lives.

Archaeologist Clark Erickson calls this work “applied archaeology,” and he has been conducting applied archaeological work in South America for decades. One of his most significant projects involved the reconstruction of raised fields in the community of Huatta near Lake Titicaca in highland Peru. The environment there is relatively harsh. Early agricultural development projects tried and failed to make the land surrounding Huatta productive. But Erickson recognized that most of the area surrounding the community had once been highly productive raised fields, and he wondered if rebuilding these ancient agricultural structures might help the community.

Raised fields are created by piling soil into a long mound, which becomes surrounded by a ditch as soil is taken from it and piled on the mound. Over time, the ditch fills with water and aquatic plants. The aquatic plants are harvested annually and placed on top of the mound as fertilizer. The water in the ditch both keeps the mound soil moist and helps control the soil temperature. As a system, raised fields form a self-sustaining agricultural microenvironment. The major drawback is that mechanized equipment cannot be used easily on these mounds and ditches, so significant amounts of human labor are often required.

Erickson began working with members of the Huatta community to rebuild several of the ancient raised fields. About five years later it was clear that raised field agriculture was well suited to the area. Raised fields were not as labor-intensive as initially thought and were as productive as nearby agricultural fields built upon better soils. More significantly, the "manure" from aquatic plants maintained the soils in the raised fields and actually improved them over time. So, although more labor-intensive, raised fields were able to bring otherwise marginal land into full agricultural production. Although many problems have arisen, including some failures, parts of the Lake Titicaca basin have been returned to raised-field agriculture.


been used for food at all. In particular, bamboo may have been used to make cutting tools and for a variety of building purposes, and gourds were probably used as containers or bowls. We do not know yet exactly when rice was first domesticated, but there is definite evidence of cultivated rice in Thailand after 4000 B.C.

Bananas and taro may have been first domesticated in New Guinea. Analyses of soils from archaeological deposits at Kuk Swamp have identified phytoliths (small silica crystals formed between plant cells that are unique to particular species of plants) from bananas and taro dating from almost 7,000 years ago. Archaeologists have known that agricultural fields with soil mounds and irrigation features have a long history in New Guinea, dating back as far as 10,000 years. The findings of very early taro and banana cultivation suggest that New Guinea may have been the location where these plants were first domesticated. Other major food plants domesticated in: Southeast Asia include yams, breadfruit, and coconuts.
Africa Some plants and animals were domesticated first in Africa. Most of the early domestica-
tions probably occurred in the wide, broad belt of woodland-savanna country
south of the Sahara and north of the equator. Among the cereal grains, sorghum was
probably first domesticated in the central or eastern part of this belt, burlrush millet and
a kind of rice (different from Asian rice) in the western part, and finger millet in the east.
Groundnuts (peanuts) and yams were first domesticated in West Africa.59 We do know
that farming became widespread in the northern half of Africa after 6000 B.C.; investiga-
tors continue to debate whether the earliest crops grown there were indigenous or bor-
rowed from the Near East. There is little doubt, however, that some of the plant foods
were first domesticated in sub-Saharan Africa because the wild varieties occur there. Many
of the important domestic animals in Africa today, especially sheep and goats, were first
domesticated elsewhere in the Old World, but one form of cattle, as well as donkey and
guinea fowl, were probably first domesticated in Africa.60

Why Did Food Production Develop?

There are many theories of why food production developed; most have tried to explain
the origin of domestication in the area of the Fertile Crescent. Gordon Childe’s theory,
popular in the 1950s, was that a drastic change in climate caused domestication in the
Near East.61 According to Childe, the postglacial period was marked by a decline in sum-
mer rainfall in the Near East and northern Africa. As the rains decreased, people were
forced to retreat into shrinking pockets, or oases, of food resources surrounded by desert.
But we now know that the climatic changes that occurred in the Near East after the re-
treat of the last glaciers had probably occurred at earlier interglacial periods too, but there
had never been a similar food-producing revolution before. Hence, according to Robert
Braidwood, there must be more to the explanation of why people began to produce food
than simply changes in climate.62
Lewis Binford and Kent Flannery thought that the incentive to domesticate animals and plants may have been a desire to reproduce what was wildly abundant in the most bountiful or optimum hunting and gathering areas. Because of population growth in the optimum areas, people might have moved to surrounding areas containing fewer wild resources. In those marginal areas, people might have first turned to food production to reproduce what they used to have. The Binford-Flannery model seems to fit the archaeological record in the Levant, the southwestern part of the Fertile Crescent, where population increase did precede the first signs of domestication. But, as Flannery admitted, in some regions, such as southwestern Iran, the optimum hunting and gathering areas do not show population increase before the emergence of domestication.

The Binford-Flannery model focuses on population pressure in a small area as the incentive to turn to food production. Mark Cohen theorizes that population pressure on a global scale explains why so many of the world’s peoples adopted agriculture within the span of a few thousand years. He argues that hunter-gatherers all over the world gradually increased in population so that the world was more or less filled with foragers by about 10,000 years ago. Thus, people could no longer relieve population pressure by moving to uninhabited areas. To support their increasing populations, they would have had to exploit a broader range of less desirable wild foods; that is, they would have had to switch to broad-spectrum collecting, or they would have had to increase the yields of the most desirable wild plants by weeding, protecting them from animal pests, and perhaps deliberately planting the most productive among them. Cohen thinks that people might have tried a variety of these strategies but would generally have ended up depending on cultivation because that would have been the most efficient way to allow more people to live in one place.

Recently, some archaeologists have returned to the idea that climatic change might have played a role in the emergence of agriculture. It seems clear from the evidence now available that the climate of the Near East about 13,000 years to 12,000 years ago became more seasonal: The summers got hotter and drier than before and the winters became colder. These climatic changes may have favored the emergence of annual species of wild grain, which archaeologically we see proliferating in many areas of the Middle East. People such as the Natufians intensively exploited the seasonal grains, developing an elaborate technology for storing and processing the grains and giving up their previous nomadic existence to do so. The transition to agriculture may have occurred when sedentary foraging no longer provided sufficient resources for the population. This could have happened because sedentarization led to population increase and therefore resource scarcity, or because local wild resources became depleted after people settled down in permanent villages. In the area of Israel and Jordan where the Natufians lived, some of the people apparently turned to agriculture, probably to increase the supply of grain, whereas other people returned to nomadic foraging because of the decreasing availability of wild grain.

Change to a more seasonal climate might also have led to a shortage of certain nutrients for foragers. For example, grazing animals get lean when grasses are not plentiful, so meat from hunting would have been in short supply in the dry seasons. Although it may seem surprising, some recent hunter-gatherers have starved when they had to rely on lean meat. If they could have increased their carbohydrate or fat intake somehow, they might have been more likely to get through the periods of lean game. So it is possible that some foragers in the past thought of planting crops to get them through the dry seasons when hunting, fishing, and gathering did not provide enough carbohydrates and fat for them to avoid starvation.

Mesoamerica presents a very different picture, because the early domesticates were not important to subsistence. Theories about population pressure and nutrient shortage don’t seem to fit Mesoamerica well. But there were apparently shortages of desired plants, such as bottle gourds, and domestication may well have occurred as humans actively sowed these desired plants. The difference between this model and the ones described previously is that humans in Mesoamerica were apparently not forced into domestication by climate change or population pressure, but actively turned to domestication to obtain more of the most desired or useful plant species. The most interesting case is maize, which only became a staple food some 2,500 or more years after it was first domesticated. Why did it become a staple? Probably both because it was a suitable staple crop (especially when intercropped with beans and squash, as discussed earlier) and because people liked it, so they grew it in large quantities. Over time, and perhaps because of conflict, population pressure, and other forces similar
to those that apparently led to domestication in the Near East, people in Mesoamerica and later North and South America came to rely on maize as their dietary mainstay.

Consequences of the Rise of Food Production

We know that intensive agriculture (permanent rather than shifting cultivation) probably developed in response to population pressure, but we do not know for sure that population pressure was even partly responsible for plant and animal domestication in the first place. Still, population growth certainly accelerated after the rise of food production (see Figure 8.4), possibly because the spacing between births was reduced further and therefore fertility (the number of births per mother) increased. Increased fertility may have been advantageous because of the greater value of children in farming and herding economies; there is evidence from recent population studies that fertility rates are higher where children contribute more to the economy. The increased workload of mothers may also (but inadvertently) decrease birth spacing. The busier a mother is, the less frequently she may nurse and the more likely her baby will be given supplementary food by other caregivers such as older siblings. Less frequent nursing and greater reliance on food other than mother’s milk may result in an earlier resumption of ovulation after the birth of a baby.

Although the rise of food production may have led to increased fertility, this does not mean that health generally improved. In fact, it appears that health declined at least sometimes with the transition to food production. The two trends may seem paradoxical, but rapid population growth can occur if each mother gives birth to a large number of babies, even if many of them die early because of disease or poor nutrition. Nutritional and disease problems are indicated by such features as incomplete formation of tooth enamel, nonaccidental bone lesions (incompletely filled-in bone), reduction in stature, and decreased life expectancy. Many of the studied prehistoric populations that relied heavily on agriculture seem to show less adequate nutrition and higher infection rates than populations living in the same areas before agriculture. Some of the agricultural populations are shorter and had lower life expectancies.

The reasons for a decline in health in those populations are not yet clear. Greater malnutrition can result from an overdependence on a few dietary staples that lack some necessary nutrients. Overdependence on a few sources of food may also increase the risk of famine because the fewer the staple crops, the greater the danger to the food supply posed by a weather-caused crop failure. But some or most nutritional problems may be the result of social and political factors, particularly the rise of different socioeconomic classes of people and unequal access, between and within communities, to food and other resources.

For the first time, apparel made of woven textiles appeared. This development was not simply the result of the domestication of flax (for linen), cotton, and wool-growing sheep. These sources of fiber alone could not produce cloth. It was the development by Neolithic society of the spindle and loom for spinning and weaving that made textiles possible. True, textiles can be woven by hand without a loom, but to do so is a slow, laborious process, impractical for producing garments.

There is also evidence of long-distance trade in the Neolithic. Obsidian from southern Turkey was being exported to sites in

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**FIGURE 8.4** Population Growth since 10,000 Years Ago

The rate of population growth accelerated after the emergence of farming and herding 10,000 years ago. The rate of growth accelerated even more dramatically in recent times.

Source: Coale 1974.
the Zagros Mountains of Iran and to what are now Israel, Jordan, and Syria in the Levant. Great amounts of obsidian were exported to sites about 190 miles from the source of supply; more than 80 percent of the tools that residents of those areas used were made of this material. Marble was being sent from western to eastern Turkey, and seashells from the coast were traded to distant inland regions.

From the time agriculture first developed until about 6000 B.C., people in the Near East lived in fairly small villages. There were few differences in wealth and status from household to household, and apparently there was no governmental authority beyond the village. There is also no evidence that these villages had any public buildings or craft specialists or that one community was very different in size from its neighbors. In short, these settlements had none of the characteristics we commonly associate with “civilization.””

But sometime around 6000 B.C., in parts of the Near East—and at later times in other places—a great transformation in the quality and scale of human life seems to have begun. For the first time, we can see evidence of differences in status among households. For example, some are much bigger than others. Communities begin to differ in size and to specialize in certain crafts. Also, there are signs that some political officials had acquired authority over several communities—that what anthropologists call “chiefdoms” had emerged.

Somewhat later, by about 3500 B.C., we can see many, if not all, of the conventional characteristics of civilization: the first inscriptions, or writing; cities; many kinds of full-time craft specialists; monumental architecture; great differences in wealth and status; and the kind of strong, hierarchical, centralized political system we call the state (see Figure 8.5).

This type of transformation has occurred many times and in many places in human history. The most ancient civilizations arose in the Near East around 3500 B.C., in northwestern India and in Peru about 2500 B.C., in northern China around 1750 B.C., in Mexico a few hundred years before the time of Christ, and in tropical Africa somewhat later. At least some of these civilizations evolved independently of the others—for example, those in the New World and those in the Old World. Why did they do so? What conditions favored the

**Civilization** Urban society, from the Latin word for “city-state.”

**State** An autonomous political unit with centralized decision making over many communities with power to govern by force (e.g., to collect taxes, draft people for war, and make and enforce laws). Most states have cities with public buildings; full-time craft and religious specialists; an “official” art style; a hierarchical social structure topped by an elite class; and a governmental monopoly on the legitimate use of force to implement policies.

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**Figure 8.5** The Emergence of Civilization
emergence of centralized, statelike political systems? What conditions favored the establishment of cities? We ask this last question separately, because archaeologists are not yet certain that all the ancient state societies had cities when they first developed centralized government. Our discussion focuses primarily on the Near East and Mexico because archaeologists know the most about the sequences of cultural development in those two areas.

8.5 Explain how archaeologists infer that a particular people in the past had social classes, cities, or a centralized government.

Archaeological Inferences About Civilization

Archaeologists rather than historians have studied the most ancient civilizations because those civilizations evolved before the advent of writing. How do archaeologists infer that a particular people in the preliterate past had social classes, cities, or a centralized government? It appears that the earliest Neolithic societies were egalitarian; that is, people did not differ much in wealth, prestige, or power. Some later societies show signs of social inequality, indicated by burial finds. Archaeologists generally assume that inequality in death reflects inequality in life, at least in status and perhaps also in wealth and power. Thus, we can be fairly sure that a society had differences in status if only some people were buried with special objects, such as jewelry or pots filled with food.

And we can be fairly sure that high status was assigned at birth rather than achieved in later life if we find noticeable differences in children’s tombs. For example, some (but not all) child burials from as early as 5500 B.C. to 5000 B.C. at Tell es-Sawwan in Iraq, and from about 800 B.C. at La Venta in Mexico, are filled with statues and ornaments, suggesting that some children had high status from birth. But burials indicating differences in status do not necessarily mean a society had significant differences in wealth. Only when archaeologists find other substantial differences, as in house size and furnishings, can we be sure the society had different socioeconomic classes of people.

Some archaeologists think that states first evolved around 3500 B.C. in greater Mesopotamia, the area now shared by southern Iraq and southwestern Iran. Archaeologists do not always agree on how a state should be defined, but most think that hierarchical and centralized decision making affecting a substantial population is the key criterion. Other characteristics are usually, but not always, found in these first states. They usually have cities with a substantial part of the population not involved directly in the collection or production of food (which means that people in cities are heavily dependent on people elsewhere); full-time religious and craft specialists, public buildings, and often an official art style. There is a hierarchical social structure topped by an elite class from which the leaders are drawn. The government tries to claim a monopoly on the use of force. (Our own state society says that citizens do not have the right “to take the law into their own hands.”) The state uses its force or threat of force to tax its population and to draft people for work or war.

How can archaeologists tell, from the information provided by material remains, whether a society was a state or not? This depends in part on what is used as the criterion for a state. For example, Henry Wright
and Gregory Johnson defined a state as a centralized political hierarchy with at least three levels of administration. But how might archaeologists infer that such a hierarchy existed in some area? Wright and Johnson suggested that the way settlement sites differ in size is one indication of how many levels of administration there were in an area.

During the early Uruk period (just before 3500 B.C.), in what is now southwestern Iran, there were some 50 settlements that seem to fall into three groups in terms of size. There were about 45 small villages, three or four “towns,” and one large center, Susa. These three types of settlements seem to have been part of a three-level administration hierarchy, because many small villages could not trade with Susa without passing through a settlement intermediate in size. Because a three-level hierarchy is Wright and Johnson’s criterion of a state, they think a state had emerged in the area by early Uruk times.

Evidence from the next period, middle Uruk, suggests more definitely that a state had emerged. This evidence takes the form of clay seals that were apparently used in trading. Commodity sealings were used to keep a shipment of goods tightly closed until it reached its destination, and message sealings were used to keep track of goods sent and received. The clay seals found in Susa include many message seals and bullae, clay containers that served as bills of lading for goods received. The villages, in contrast, had few message seals and bullae. Again, this finding suggests that Susa administered the regional movement of goods and that Susa was the “capital” of the state.

Let us turn now to the major features of the cultural sequences leading to the first states in southern Iraq.

Cities and States in Southern Iraq

Farming communities older than the first states have not been found in the arid lowland plains of southern Iraq—the area known as Sumer, where some of the earliest cities and states developed. Perhaps sat from the Tigris and Euphrates rivers has covered them. Or, as has been suggested, Sumer may not have been settled by agriculturalists until people learned how to drain and irrigate river-valley soils otherwise too wet or too dry for cultivation. At any rate, small communities depending partly on agriculture had emerged in the hilly areas north and east of Sumer early in the Neolithic. Later, by about 6000 B.C., a mixed herding and farming economy developed in those areas.

The Formative Era

Elman Service called the period from about 5000 B.C. to 3500 B.C. the formative era, for it saw the coming together of many changes that seem to have played a part in the development of cities and states. Service suggested that, with the development of small-scale irrigation, lowland river areas began to attract settlers. The rivers provided not only water for irrigation but also mollusks, fish, and waterbirds for food. They also provided routes by which to import needed raw materials, such as hardwood and stone, that were lacking in Sumer.

Changes during this period suggest an increasingly complex social and political life. Differences in status are reflected in the burial of statues and ornaments with children. Different villages specialized in the production of different goods—pottery in some, copper and stone tools in others. Temples were built in certain places that may have been centers of political as well as religious authority for several communities. Furthermore, some anthropologists think that chiefdoms, each having authority over several villages, had developed by this time.

Sumerian Civilization

By about 3500 B.C., there were quite a few cities in the area of Sumer. Most were enclosed in a fortress wall and surrounded by an agricultural area. About 3000 B.C., all of Sumer was unified under a single government. After that time, Sumer became an empire. It had great urban centers. Imposing temples, commonly set on artificial mounds, dominated the cities. In the city of Warka, the temple mound was about 150 feet high. The empire was very complex and included an elaborate system for the administration of
justice, codified laws, specialized government officials, a professional standing army, and even sewer systems in the cities. Among the many specialized crafts were brickmaking, pottery, carpentry, jewelry making, leatherworking, metallurgy, basketmaking, stoneworking, and sculpture. Sumerians learned to construct and use wheeled wagons, sailboats, horse-drawn chariots, and spears, swords, and armor of bronze. 

As economic specialization developed, social stratification became more elaborate. Sumerian documents describe a system of social classes: nobles, priests, merchants, craftworkers, metallurgists, bureaucrats, soldiers, farmers, free citizens, and slaves. Slaves were common in Sumer; they often were captives, brought back as the spoils of war.

We see the first evidence of writing around 3000 B.C. The earliest Sumerian writings were in the form of ledgers containing inventories of items stored in the temples and records of livestock or other items owned or managed by the temples. Sumerian writing was wedge-shaped, or cuneiform, formed by pressing a stylus against a damp clay tablet. For contracts and other important documents, the tablet was fired to create a virtually permanent record. Egyptian writing, or hieroglyphics, appeared about the same time. Hieroglyphics were written on rolls woven from papyrus reeds, from which our word paper derives.

**Cities and States in Mesoamerica**

Cities and states emerged in Mesoamerica—Mexico and Central America—later than they did in the Near East. The later appearance of civilization in Mesoamerica may be linked to the later emergence of agriculture in the New World and possibly to the near-absence of large animals such as cattle and horses that could be domesticated. We focus primarily on the developments that led to the rise of the city-state of Teotihuacán, which reached its height shortly after the time of Christ. Teotihuacán is located in a valley of the same name, which is the northeastern part of the larger Valley of Mexico.

**The Formative Period**

The formative period in the area around Teotihuacán (1000 B.C. to 300 B.C.) was characterized initially by small, scattered farming villages on the hilly slopes just south of the Teotihuacán Valley. There were probably a few hundred people in each hamlet, and each of these scattered groups was probably politically autonomous. After about 500 B.C., there seems to have been a population shift to settlements on the valley floor, probably
in association with the use of irrigation. Between about 300 B.C. and 200 B.C., small “elite” centers emerged in the valley; each had an earthen or stone raised platform. Residences or small temples of poles and thatch originally stood on these platforms. That some individuals, particularly those in the elite centers, were buried in special tombs supplied with ornaments, headdresses, carved bowls, and a good deal of food indicates some social inequality. The various elite centers may indicate the presence of chiefdoms.

The City and State of Teotihuacán

About 150 years before the time of Christ, no more than a few thousand people lived in scattered villages in the Teotihuacán Valley. In A.D. 100, there was a city of 80,000. By A.D. 500, well over 100,000 people, or approximately 90 percent of the entire valley population, seem to have been drawn or coerced into Teotihuacán.

The layout of the city of Teotihuacán, which shows a tremendous amount of planning, suggests that the valley was politically unified under a centralized state from its beginning. Mapping has revealed that the streets and most of the buildings are laid out in a grid pattern following a basic modular unit of over 613 square feet (57 square meters). Residential structures are often squares of this size, and many streets are spaced according to multiples of the basic unit. Even the river that ran through the center of the city was channeled to conform to the grid pattern. Perhaps the most outstanding feature of the city is the colossal scale of its architecture. Two pyramids dominate the metropolis, the so-called Pyramid of the Moon and the Pyramid of the Sun. At its base, the latter is as big as the Great Pyramid of Cheops in Egypt.

The thousands of residential structures built after A.D. 300 follow a standard pattern. Narrow streets separate the one-story buildings, each of which has high, windowless walls. Patios and shafts provide interior light. The layout of rooms suggests that each building consisted of several apartments; more than 100 people may have lived in one of these apartment compounds. There is variation from compound to compound in the size of rooms and the elaboration of interior decoration, suggesting considerable variation in wealth.

At the height of its power (A.D. 200 to A.D. 500), the metropolis of Teotihuacán encompassed an area larger than imperial Rome. Much of Mesoamerica seems to have been influenced by Teotihuacán. Archaeologically, its influence is suggested by the extensive spread of Teotihuacán-style pottery and architectural elements. Undoubtedly, large numbers of people in Teotihuacán were engaged in production for, and the conduct of, long-distance trade. Perhaps 25 percent of the city’s population worked at various specialized crafts, including the manufacture of projectile points and cutting and scraping tools from volcanic obsidian. Teotihuacán was close to major deposits of obsidian, which was apparently in some demand over much of Mesoamerica. Materials found in graves indicate that there was an enormous flow of foreign goods into the city, including precious stones, feathers from colorful birds in the tropical lowlands, and cotton.

Cities and States in Other Areas

So far, we have discussed the emergence of cities and states in southern Iraq and Mesoamerica, whose development is best, if only imperfectly, known archaeologically. But other state societies probably arose more or less independently in many other areas of the world as well. We say “independently” because such states seem to have emerged without colonization or conquest by other states.